

Closed-Loop Movement Feedback (CLMF) NVIDIA-JETSON BEHAVIOR IMAGING RIG

PART LIST

TRIPLE LED LIGHT GUIDE

Bought Parts

Manufacturer	Name	Part ID	Quantity
Thorlabs	Liquid Light Guide Ø3 mm Core	LLG0338-4	1
Thorlabs	SM1 Lens Tube, 3.00" Thread Depth, One Retaining Ring Included	SM1L30	3
Thorlabs	SM1 Lens Tube, 0.50" Thread Depth, One Retaining Ring Included	SM1L05	3
Thorlabs	SM1 Lens Tube, 2.00" Thread Depth, One Retaining Ring Included	SM1L20	1
Thorlabs	f=30.0 mm, Ø1" Achromatic Doublet, ARC: 400-700 nm	AC254-030-A	1
Thorlabs	N-BK7 Bi-Convex Lens, Ø1", f = 25.4 mm, Uncoated	LB1761	3
Thorlabs	Ø3 mm LLG to SM1 Adapter	AD3LLG	1
Thorlabs	30 mm Cage Cube with Dichroic Filter Mount	CM1-DCH	2
Thorlabs	Cage Cube Connector for Compact 30 mm Cage Cubes	CM1-CC	1
Thorlabs	25 mm x 36 mm Longpass Dichroic Mirror, 550 nm Cutoff	DMLP550R	1
Thorlabs	Ø1" Laser Line Filter, CWL = 635 ± 2 nm, FWHM = 10 ± 2 nm	FL635-10	1
Thorlabs	Ø1" Bandpass Filter, CWL = 440 ± 2 nm, FWHM = 10 ± 2 nm	FB440-10	1
Thorlabs	SM1 Retaining Ring for Ø1" Lens Tubes and Mounts, 10 Pack	SM1RR-P10	1
Chroma	AT455DC Size: 26 * 38 mm	AT455DC	1
Chroma	ET480/30x Size: 25mmR R=Mounted in Ring	ET480/30x	1
Luxeonstar	Royal-Blue (448nm) Rebel LED on a SinkPAD-II 20mm Star Base - 1030 mW @ 700mA	SP-01-V4	1
Luxeonstar	Blue (470nm) Rebel LED on a SinkPAD-II 10mm Square Base - 65 lm @ 700mA	SP-05-B4	1
Luxeonstar	Red (627nm) Rebel LED on a SinkPAD-II 20mm Star Base - 64 lm @ 350mA	SP-01-D9	1

Machined Parts

File Name	Quantity
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Milled as-1.50_2_v2.SLDPRT	3
Spacer_with_wire_hole_as-.500_v2.SLDPRT	3
LED_mount_as-1.50_v2.SLDPRT	3

3D Printed Parts

File Name	Quantity
TripleLEDLightGuide_Base.stl	1

RIG**Purchased Parts**

Manufacturer	Name	Part ID	Quantity
N/A	¼-20 Set Screws, Bolts, Nuts, Washers; M2 Screws, Nuts	N/A	Enough
N/A	1.5 Inch Outer Diameter 1 ½ Inch Inner Diameter Acrylic Tubing	N/A	4 Inch Length
Thorlabs	Clamping Fork, 1.24" Counterbored Slot, Universal	CF125	2
Thorlabs	Ø1/2" Pedestal Post Holder, Spring-Loaded Hex-Locking Thumbscrew, L=1.19"	PH1E	2
Thorlabs	Ø1/2" Optical Post, SS, 8-32 Setscrew, 1/4"-20 Tap, L = 4"	TR4	1
Thorlabs	Ø1/2" Optical Post, SS, 8-32 Setscrew, 1/4"-20 Tap, L = 6"	TR6	1
Thorlabs	Ø1/2" Optical Post, SS, 8-32 Setscrew, 1/4"-20 Tap, L = 1.5"	TR1.5	2
Thorlabs	Compact Variable Height Clamp, 1/4"-20 Tapped	CL3	2
Edmund Optics	6" x 6", Breadboard	#56-930	1
Edmund Optics	12" x 12", Breadboard	#53-830	1
Edmund Optics	4" Length, ¼-20 Thread, Post Holder	#58-980	1
Edmund Optics	Right Angle Post Clamps	#53-357	1
Edmund Optics	12.7mm - 12.7mm (Rotatable), Right Angle Post Clamp	#58-994	1
Siskiyou	AS-.500 Aluminium Spacer 0.5 Inches Package of 4	60400000E	1
Siskiyou	AS-2.00 Aluminium Spacer 2 Inches Package of 4	60430000E	1
Sherline	Vertical Milling Column	3050	1

Machined Parts

File Name	Quantity
BarClamp_V.SLDPRT	2
Clamp.SLDPRT	2

3D Printed Parts

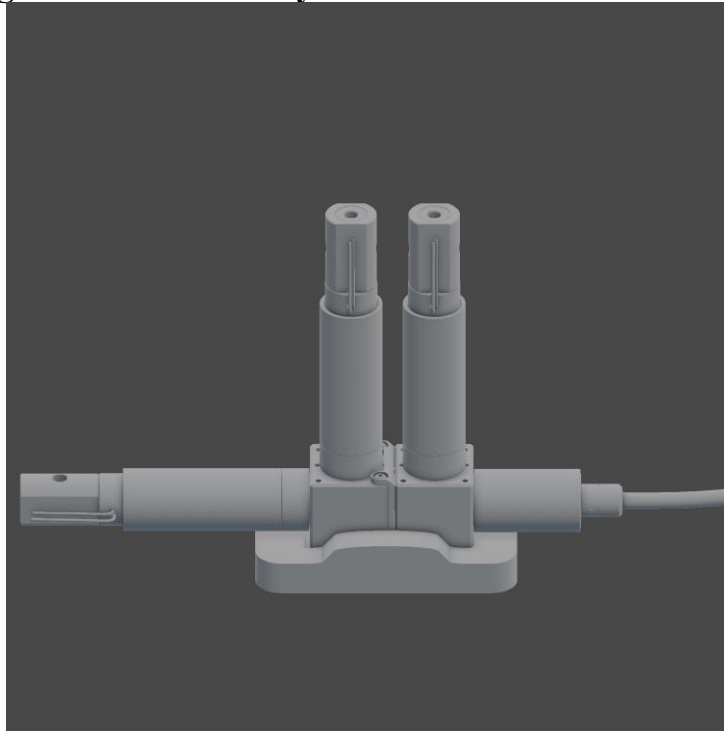
File Name	Quantity
TubeHolder_Even.stl	1
Camera_Holder_Mark_II.stl	1
Light Guide Mount_MarkII.stl	1
4PiTower.stl	1
BehaviourCameraArms.stl	1

Electronics

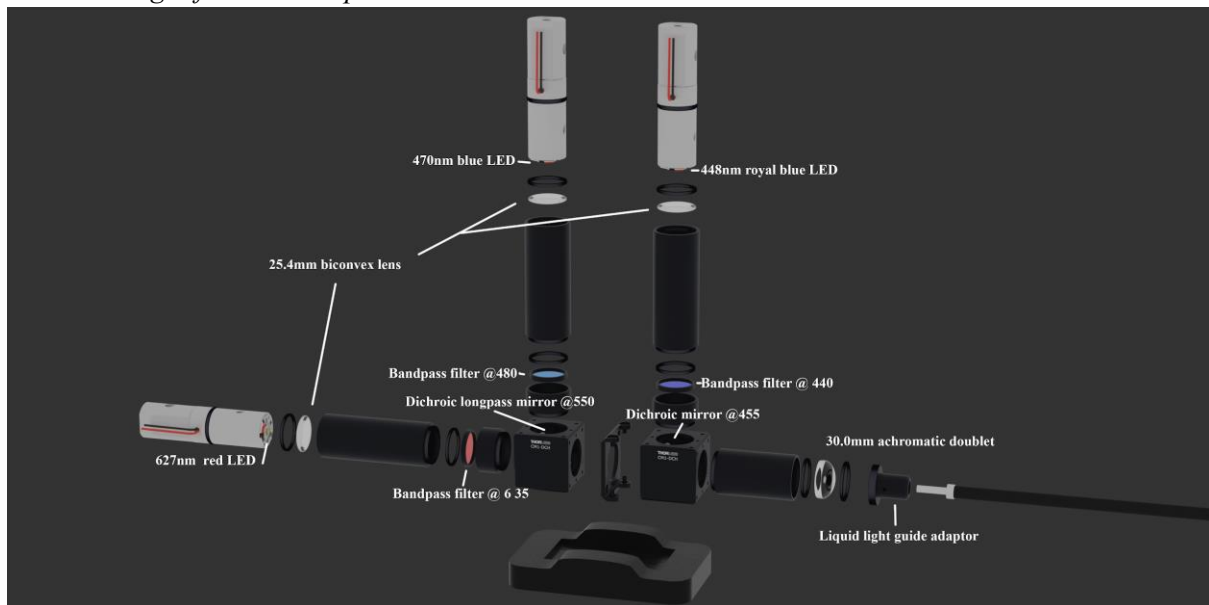
Manufacturer	Name	Part ID	Quantity
Sparkfun	Hook-Up Wire - Assortment (Stranded, 22 AWG)	11375	1
RaspberryPi	NVIDIA Jetson Orin (8-core ARM Cortex CPU, 2048 CUDA cores, 64 GB memory)	N/A	1
Omron Sentech	STC-MCCM401U3V USB3 Vision camera	N/A	1
Teledyne Dalsa	DS-21-01M60	N/A	1
N/A	LED Driver	N/A	2
Logitech	Logitech Speaker System S120	LOG980000010	1

ASSEMBLY OF THE CLNF RIG

Triple LED Light Guide Assembly

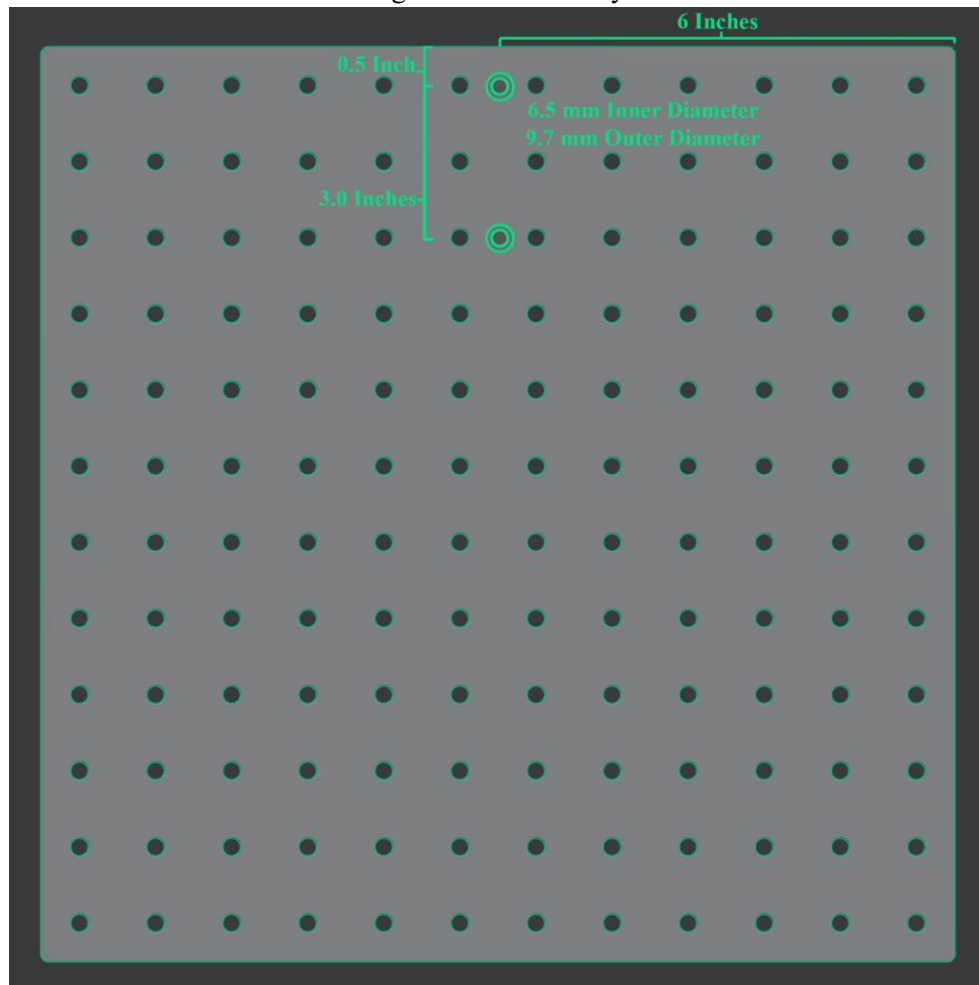


Note: To ensure proper placement on the 3D printed light guide base ensure the rotation of the cage cubes with the dichroic mirror backings and the cage cube connectors matches the base as one of the widths is larger from the midpoint.

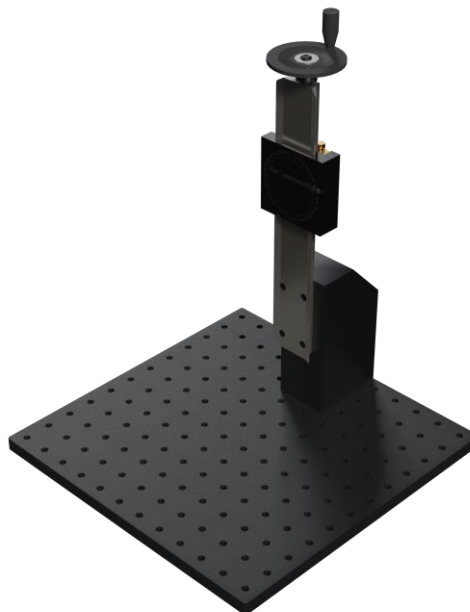


Platform Setup

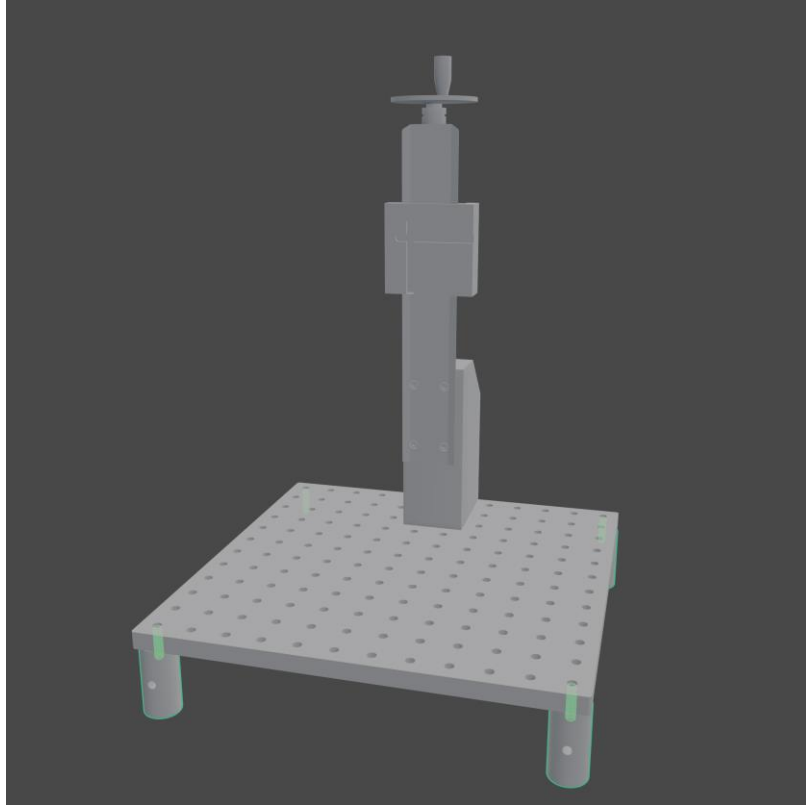
- 1) Drill 2 countersink holes at the edge of the 12 inch by 12 inch breadboard.



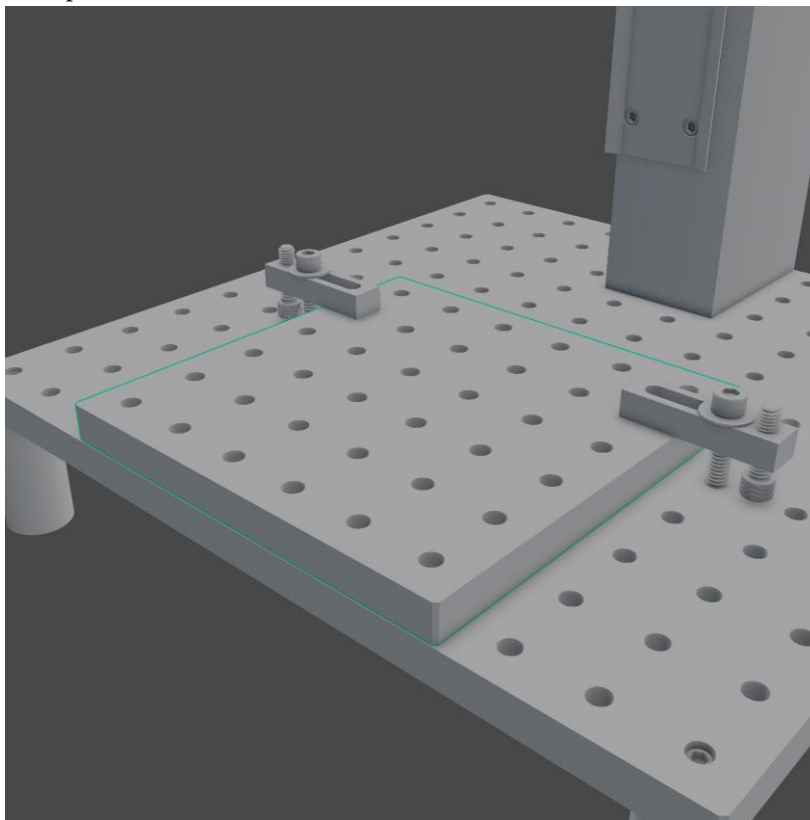
- 2) Attach the vertical milling mount on the plate using the provided bolt from Sherline.



- 3) To allow easier handling of the rig, attach the four 2 inch spacers from Siskiyou at the four corners of the breadboard using 1/4-20 set screws.



- 4) Place the 6 inch by 6 inch breadboard on top of the platform and secure using the 2 compact variable clamps from Thorlabs.



- 5) Using the four half inch spacers from Siskiyou, attach the 3D printed tube holder using $\frac{1}{4}$ -20 screws, ensuring that they are not long enough to penetrate the entire breadboard and make contact with the platform.

- 6) Custom made headfixing chamber parts. Design files for laser cutting parts from a plexiglass sheet as shown below included in the repository. A mirror was inserted in the angled slot of part 4 and part 5 to image the bottom of the mouse in side view.

